WHAT IS CLAIMED IS:

1. A thermal analyzer for predicting a temperature of an object to be heated, when a heating furnace heats said object based on predetermined heating conditions, said thermal analyzer comprising:

an input unit for inputting at least the heating conditions, the physical property data of said object and the view factor setting data of said object;

a view factor calculation unit which calculates a view factor corresponding to a position of said object with respect to heating sources, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of said heating sources of said heating furnace, and the view factor setting data; and

a temperature calculation unit which calculates the temperature of said object, based on the heating conditions, the physical property of said object, the heating characteristic data of said heating furnace and the view factor.

2. A thermal conditions calculator for deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when a heating furnace heats said object based on the

predetermined heating conditions, said thermal conditions calculator comprising:

an input unit for inputting the desired conditions of heating characteristic data, heating characteristic data of said object and an evaluation function;

a temperature calculation unit which calculates the temperature of said object, based on the heating characteristic data and the heating characteristic data of said object; and

a judgment unit which judges whether the evaluation function satisfies predetermined conditions or not, with respect to the temperature calculated by said temperature calculation unit,

wherein if said judgment unit judges that the evaluation function does not satisfy the predetermined conditions it changes the heating conditions, and if said judgment unit judges that the evaluation function satisfies the predetermined conditions it outputs the heating conditions set at the time of calculation of the temperature; and

when the heating conditions are changed by said judgment unit, said temperature calculation unit calculates the temperature of said object again, based on the changed heating conditions.

3. A thermal conditions calculator for deriving predetermined heating conditions so that the temperature of an object to be heated comprising a plurality of constituents satisfies desired conditions when a heating furnace heats said object based on the predetermined heating conditions, said thermal conditions calculator comprising:

an input unit for inputting at least an evaluation function that satisfies conditions when a temperature difference between the plurality of constituents becomes a predetermined value or below, the heating conditions and the physical property data of said object;

a temperature calculation unit which calculates the temperature of said object, based on heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating conditions and the physical property of said object; and

a judgment unit which judges whether the temperature calculated by said temperature calculation unit satisfies the evaluation function or not,

wherein if said judgment unit judges that the temperature does not satisfy the evaluation function it changes the heating conditions, and if said judgment unit judges that the temperature satisfies the evaluation function it outputs the heating conditions set at the time

of calculation of the temperature; and

when the heating conditions are changed by said judgment unit, said temperature calculation unit calculates the temperature of said object again, based on the changed heating conditions.

4. The thermal conditions calculator according to claim 3, further comprising a second judgment unit which specifies a temperature at which a temperature difference between the plurality of constituents becomes minimum, of the temperatures judged as satisfying the evaluation function in said judgment unit, and outputs the heating conditions set at the time of calculation of the specified temperature.

5. A thermal conditions calculator for deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when a heating furnace heats said object based on the predetermined heating conditions, said thermal conditions calculator comprising:

an input unit for inputting at least an evaluation function that satisfies conditions when the temperature of said object becomes a predetermined allowable temperature or below, the heating conditions and the physical property data of said object;

a temperature calculation unit which calculates the temperature of said object, based on heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating conditions and the physical property of said object; and

a judgment unit which judges whether the temperature calculated by said temperature calculation unit satisfies the evaluation function or not,

wherein if said judgment unit judges that the temperature does not satisfy the evaluation function it changes the heating conditions, and if said judgment unit judges that the temperature satisfies the evaluation function it outputs heating conditions set at the time of calculation of the temperature; and

when the heating conditions are changed by said judgment unit, said temperature calculation unit calculates the temperature of said object again, based on the changed heating conditions.

6. The thermal conditions calculator according to claim 5, further comprising a second judgment unit which specifies a temperature at which a difference between the temperature of said object and said allowable temperature, or an integral value of the n-th power of said difference (n>0) becomes

minimum, of the temperatures judged as satisfying the evaluation function in said judgment unit, and outputs the heating conditions set at the time of calculation of the specified temperature.

7. A method of thermal analysis of predicting a temperature of an object to be heated, when a heating furnace heats said object based on predetermined heating conditions, the method comprising the steps of:

inputting at least the heating conditions, the physical property data of said object and the view factor setting data of said object;

calculating a view factor corresponding to a position of said object with respect to heating sources, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of said heating sources of said heating furnace, and the view factor setting data; and

calculating the temperature of said object, based on the heating conditions, the physical property of said object, the heating characteristic data of said heating furnace and the view factor.

8. A method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when a heating furnace heats said object based on the predetermined heating conditions, the method comprising the steps of:

inputting at least an evaluation function indicating the desired conditions, the heating conditions, the physical property data of said object and the view factor setting data of said object;

calculating a view factor corresponding to a position of said object with respect to heating sources, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of said heating sources of said heating furnace, and the view factor setting data;

calculating the temperature of said object, based on the heating conditions, the physical property of said object, the heating characteristic data of said heating furnace and the view factor; and

judging whether the calculated temperature satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature

if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating conditions.

9. A method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated comprising a plurality of constituents satisfies desired conditions when a heating furnace heats said object based on the predetermined heating conditions, the method comprising the steps of:

inputting at least an evaluation function that satisfies conditions when a temperature difference between said pluralities of constituents becomes a predetermined value or below, the heating conditions and the physical property data of said object;

calculating the temperature of said object, based on heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating conditions and the physical property of said object; and

judging whether the temperature calculated in said

temperature calculation step satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating conditions.

10. The method of calculating thermal conditions according to claim 9, further comprising a second judgment step of specifying a temperature at which a temperature difference between the plurality of constituents becomes minimum, of the temperatures judged as satisfying the evaluation function in said judgment step, and outputting the heating conditions set at the time of calculation of the specified temperature.

11. A method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when

a heating furnace heats said object based on the predetermined heating conditions, the method comprising the steps of:

inputting at least an evaluation function that satisfies conditions when the temperature of said object becomes a predetermined allowable temperature or below, the heating conditions and the physical property data of said object;

calculating the temperature of said object, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating conditions and the physical property of said object; and

judging whether the temperature calculated in said temperature calculation step satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating

conditions.

12. The method of calculating thermal conditions according to claim 11, further comprising a second judgment step of specifying a temperature at which a difference between the temperature of said object and said allowable temperature, or an integral value of the n-th power of said difference (n>0) becomes minimum, of the temperature judged as satisfying the evaluation function in said judgment step, and outputting the heating conditions set at the time of calculation of the specified temperature.

13. A computer program which when executed on a computer realizes a method of thermal analysis of predicting a temperature of an object to be heated, when a heating furnace heats said object based on predetermined heating conditions, the computer program making the computer execute the steps of:

inputting at least the heating conditions, the physical property data of said object and the view factor setting data of said object;

calculating a view factor corresponding to a position of said object with respect to heating sources, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement

of said heating sources of said heating furnace, and the view factor setting data; and

calculating the temperature of said object, based on the heating conditions, the physical property of said object, the heating characteristic data of said heating furnace and the view factor.

14. A computer program which when executed on a computer realizes method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when a heating furnace heats the object based on the predetermined heating conditions, the computer program making the computer execute the steps of:

inputting at least an evaluation function indicating the desired conditions, the heating conditions, the physical property data of said object and the view factor setting data of said object;

calculating a view factor corresponding to a position of said object with respect to heating sources, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of said heating sources of said heating furnace, and the view factor setting data;

calculating the temperature of said object, based on

the heating conditions, the physical property of said object, the heating characteristic data of said heating furnace and the view factor; and

judging whether the calculated temperature satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating conditions.

15. A computer program which when executed on a computer realizes method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated comprising a plurality of constituents satisfies desired conditions when a heating furnace heats the object based on the predetermined heating conditions, the computer program making the computer execute the steps of:

inputting at least an evaluation function that

satisfies conditions when a temperature difference between said pluralities of constituents becomes a predetermined value or below, the heating conditions and the physical property data of said object;

calculating the temperature of said object, based on heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating conditions and the physical property of said object; and

judging whether the temperature calculated in said temperature calculation step satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating conditions.

16. The computer program according to claim 15, further making the computer execute a second judgment step of specifying a temperature at which a temperature difference between the plurality of constituents becomes minimum, of the temperatures judged as satisfying the evaluation function in said judgment step, and outputting the heating conditions set at the time of calculation of the specified temperature.

17. A computer program which when executed on a computer realizes method of calculating thermal conditions of deriving predetermined heating conditions so that the temperature of an object to be heated satisfies desired conditions when a heating furnace heats the object based on the predetermined heating conditions, the computer program making the computer execute the steps of:

inputting at least an evaluation function that satisfies conditions when the temperature of said object becomes a predetermined allowable temperature or below, the heating conditions and the physical property data of said object;

calculating the temperature of said object, based on the heating characteristic data of the heating furnace including data regarding at least the number and arrangement of heating sources of said heating furnace, the heating

conditions and the physical property of said object; and

judging whether the temperature calculated in said temperature calculation step satisfies the evaluation function or not, and changing the heating conditions if it is judged that the temperature does not satisfy the evaluation function, and outputting the heating conditions set at the time of calculation of the temperature if it is judged that the temperature satisfies the evaluation function,

wherein the calculation of temperature and the judgment of whether the calculated temperature satisfies the evaluation function or not are repeated, when the heating conditions are changed, again based on the changed heating conditions.

18. The computer program according to claim 17, further making the computer execute a second judgment step of specifying a temperature at which a difference between the temperature of said object and said allowable temperature, or an integral value of the n-th power of said difference (n>0) becomes minimum, of the temperature judged as satisfying the evaluation function in said judgment step, and outputting the heating conditions set at the time of calculation of the specified temperature.